

REMARKS

Status of the claims

Upon entry of this amendment, claims 1-6 and 8-13 are pending in this application. Of these, claim 1 is independent. Claims 1-6 and 8-10 are amended. Claim 7 is canceled. New claims 11-13 are added. Applicants believe that these changes introduce no new matter. Entry and consideration of this amendment are respectfully requested. A copy of the above changes showing deletions and insertions is provided in the Attachment following this Amendment.

Objections to the Abstract

The Abstract is objected to for not being on a separate page and for being greater than 150 words in length. Attached herewith is a substitute abstract that is less than 150 words and on a separate page. Accordingly, Applicants request that this objection be withdrawn.

Objections to the Claims

Claims 2 and 7 are objected to for containing various informalities.

With respect to claim 2, the Examiner states that "the geometry", as recited in claim 2, lacks antecedent basis. Claim 2 has been amended to correct this informality. In addition, the Examiner states that "the attitude", as recited in claim 2 also lacks antecedent basis. Applicants respectfully disagree. This term is first introduced in independent claim 1.

With respect to claim 7, the Examiner states that the term "the other" lacks antecedent basis. Claim 7 has been canceled and replaced with claims 11 and 12.

Accordingly, Applicants request that these objections be withdrawn.

Rejections under 35 U.S.C. § 112

Claim 2 is rejected under 35 U.S.C. § 112, second paragraph for allegedly failing to clearly describe the variables a, b, K, θ , and θ_0 . Applicants respectfully disagree. These variables are clearly described with respect to the geometry of the recited

correction device, as well as with respect to the attitude and height of the recited vehicle. Accordingly, Applicants request that this rejection be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1 and 3-10 are rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent No. 6,144,159 to Lopez et al. (hereinafter Lopez). Applicants respectfully traverse this rejection.

Independent claim 1 is directed to a device for automatic correction of the orientation of at least one motor vehicle headlamp. This device includes a sensor that supplies an output signal (dc_1 , dc_2). this output signal corresponds to light spots (T_1 , T_2) which are "spaced apart in a direction parallel to the longitudinal axis of the vehicle."

On page 3 of the Office Action, the Examiner asserts that Lopez discloses this feature as spacing signals $e10$ and $e20$, which represent the spacings $e1$ and $e2$ of the spots 24-27 on the road 14. (col. 5, lines 20-26).

Figure 1a of Lopez illustrates that spacings $e1$ and $e2$ are perpendicular to the longitudinal axis of the depicted automobile, not parallel, as recited in claim 1.

Accordingly, the features of claim 1 and its dependent claims 3-10 are neither taught nor suggested by Lopez. Thus, Applicants respectfully request that this rejection be withdrawn.

Claim 13

New claim 13, depends from claim 2. Applicants assert that the features of this claim are neither taught nor suggested by Lopez.

CONCLUSION

Applicants respectfully submit that all of the stated grounds of rejection have been properly traversed accommodated or rendered moot. Thus, Applicants believe that the present application is in condition for allowance, and as such, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections, and allowance of this application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 1948-4761. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 13-4500, Order No. 1948-4761. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): P. COUILLAUD, et al.
Serial No.: 09/966,950 Group Art Unit: 2875
Filed: September 28, 2001 Examiner: B. Truong
For: **DEVICE FOR AUTOMATIC CORRECTION OF THE
ORIENTATION OF A MOTOR-VEHICLE HEADLAMP IN
ELEVATION**

ATTACHMENT

In this attachment, all additions are shown underlined (e.g., the), and deletions are shown in brackets (e.g., [the]).

IN THE CLAIMS:

Please note the following changes to claims 1-10:

1. (Amended) A device [Device] for automatic correction of the orientation of at least one motor-vehicle [(V)] headlamp [(P)] upon variations in the attitude of the motor vehicle [(V)], including:

an emitter [(1)] projecting, onto the ground in front of the vehicle [(V)], two light spots (T₁, T₂) which are spaced apart in a direction parallel to the longitudinal axis of the vehicle [(V)],

a sensor [(2)] of the illumination of the light spots (T₁, T₂) comprising an objective [(3)] forming an image (I₁, I₂) of the light spots (T₁, T₂) on a receiver [(6)] and supplying an output signal (dc₁, dc₂) for each one,

processing means [(5)] suitable for deriving a control signal from the output signal from the sensor [(2)], and

an actuator [(4)] controlled by the control signal and able to alter the elevation orientation of a reflector [(R)] of the headlamp [(P)],

[characterised in that] wherein the control signal for the actuator [(4)] is derived by the processing means [(5)] on the basis of a linear function of the output signals (dc_1 , dc_2) supplied by the sensor [(2)] for each image (I_1 , I_2) of each light spot (T_1 , T_2).

2. (Amended) The device [Device] according to claim 1, [characterised in that] wherein the linear function between the output signals (dc_1 , dc_2) from the sensor [(2)] for each image (I_1 , I_2) of each light spot (T_1 , T_2) is of the form:

$$dc_1 - a \times dc_2 = K \times (\theta - \theta_0) + b,$$

[where] wherein a , b and θ_0 are constants characteristic of [the geometry of] the correction device's geometry, θ is an angle representative of the attitude of the vehicle [(V)], and [where] wherein K is a magnitude representative of the height of the vehicle.

3. (Amended) The device [Device] according to claim 1, [characterised in that] wherein the emitter [(1)] and the sensor [(2)] are fixed with respect to one another.

4. (Amended) The device [Device] according to claim 3, [characterised in that] wherein the emitter [(1)] and the sensor [(2)] are integral with a movable part [(R)] of the vehicle.

5. (Amended) The device [Device] according to claim 4, [characterised in that] wherein the movable part [(R)] of the vehicle consists of the reflector [(R)] of a headlamp [(P)] of the vehicle.

6. (Amended) The device [Device] according to claim 3, [characterised in that] wherein the emitter [(1)] and the sensor [(2)] are fixed with respect to the vehicle.

8. (Amended) The device [Device] according to claim 1, [characterised in that] wherein the light spots (T_1 , T_2) define a straight-line segment substantially parallel to the longitudinal axis of the vehicle.

9. (Amended) The device [Device] according to claim 1, [characterised in that] wherein the emitter [(1)] and the sensor [(2)] are situated substantially in the same vertical plane.
10. (Amended) The device [Device] according to claim 1, [characterised in that] wherein the direction of illumination of the emitter [(1)] and the optical axis of the sensor [(2)] are contained in the same vertical plane parallel to the longitudinal axis of the vehicle.
11. (New) The device according to claim 1, wherein the emitter is situated on a fixed part of the vehicle, and the sensor is situated on a movable part of the vehicle.
12. (New) The device according to claim 1, wherein the emitter is situated on a movable part of the vehicle, and the sensor is situated on a fixed part of the vehicle.
13. (New) The device according to claim 2,
wherein θ is an angle formed between an optical axis of the sensor and the ground in front of the vehicle;
wherein θ_0 is a nominal initial value of the angle θ when the elevation orientation of the reflector of the headlamp is correctly set up in inclination;
wherein the beam L_1 forms an angle $\theta - k_1$ with the ground in front of the vehicle,
wherein the beam L_2 forms an angle $\theta - k_2$ with the ground in front of the vehicle,
wherein $a = \frac{1 - \tan(k_1) \times \tan(k_2) + (\tan^2(\theta_0) - 1) \times \frac{\tan(k_1)}{\tan(\theta_0)}}{1 - \tan(k_1) \times \tan(k_2) + (\tan^2(\theta_0) - 1) \times \frac{\tan(k_2)}{\tan(\theta_0)}}$, and
wherein $b = \frac{\tan(k_2) - \tan(k_1)}{1 - \tan(k_1) \times \tan(k_2) + (\tan^2(\theta_0) - 1) \times \frac{\tan(k_2)}{\tan(\theta_0)}}$.

IN THE ABSTRACT:

Please note the following changes to the Abstract:

[The present invention relates to a] A device for automatic correction of the orientation of at least one motor-vehicle [(V)] headlamp [(P)] upon variations in the attitude of the motor vehicle [(V), including] includes

an emitter [(1)] projecting, onto the ground in front of the vehicle [(V)], two light spots (T_1 , T_2) which are spaced apart in a direction parallel to the longitudinal axis of the vehicle [(V)],

a sensor [(2)] of the illumination of the light spots (T_1 , T_2) comprising an objective [(3)] forming an image (I_1 , I_2) of the light spots (T_1 , T_2) on a receiver [(6)] and supplying an output signal (dc_1 , dc_2) for each one,

processing means [(5)] suitable for deriving a control signal from the output signal from the sensor [(2)], and

an actuator [(4)] controlled by the control signal and able to alter the elevation orientation of a reflector [(R)] of the headlamp [(P)].

[According to the present invention, the control signal for the actuator (4) is derived by the processing means (5) on the basis of a linear function of the output signals (dc_1 , dc_2) supplied by the sensor (2) for each image (I_1 , I_2) of each light spot (T_1 , T_2)]